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ways even when following the same code. This difference may be due to the fact that one author has more abundant material upon which to base his conclusion, or it may be due to a difference of opinion as to the relation of the organisms, or in the interpretation of the work of others. Differences in the application of names due to these causes are not the result of imperfections in the code followed, and no code can eliminate such changes. In fact it would be very unwise to attempt such elimination. Students must not be handicapped in serious study. On the other hand, it is well to discourage the study of nomenclature as apart from the study of organisms. I believe it is impossible for any person or any committee, to prepare a list of organisms which shall be permanent; partly because such person, or committee, may not be sufficiently familiar with the organisms, and partly because the knowledge concerning these organisms is ever increasing. The value of a code of nomenclature should be judged by its usefulness in determining the application of names, rather than by the changes that may result.

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THE MAGNETIC STORM OF SEPTEMBER 25, 1909

AN exceedingly severe magnetic storm was recorded at the Cheltenham Magnetic Observatory on September 25, 1909, the first indications appearing as a slight disturbance of the magnets at 3:27 A.M., 75th meridian time.

The period of greatest disturbance began at 6:39 A.M. and lasted until about 4 P.M., and during most of this interval the movements of the recording magnets were so sudden and of so large amplitude that the spots of light failed to produce any impression on the photographic paper, except in the case of declination, where a partial record was secured.

From 6:39 to 8:17 A.M. the changes in the earth's magnetism were so great that the magnets were deflected far out of their normal positions and the spots of light passed beyond the limits of the photographic paper. During this interval the magnets which furnish a

record of the changes in vertical intensity were upset by the variations in the earth's magnetism. These magnets are balanced on a knife-edge or a pair of fine points and are extremely sensitive.

As there was no observer on duty until 8:00 A.M. no estimate can be made of the changes during the interval of greatest disturbance. The actual ranges of the magnetic elements during this storm are therefore unknown.

Two complete magnetographs are in operation at this observatory and are arranged to give continuous photographic records. Each consists of three instruments arranged to give record of the variations in the three elements, declination, horizontal intensity and vertical intensity, respectively. One of the magnetographs, the "Adie," is also fitted with telescopes and scales, so that the position of each magnet may be observed and the actual value of the element determined at any instant. These scales cover a range in the position of the magnet about two and one half times as great as that covered by the paper.

DECLINATION (West)

| 75th mer. time | Value | Remarks |
|----------------|-------|----------------------|
| h m | ° ' | |
| 6 39 A.M. | 6 29 | Off paper. |
| 8 00 | 6 46 | Eye reading. |
| 8 05 | 8 22 | Eye-reading maximum. |
| 8 19 | 3 25 | Minimum. |
| 1 18 P.M. | 4 44 | |
| 1 52 | 6 29 | |
| 1 58 | 6 54 | |
| 2 38 | 6 40 | |
| | 5 36 | Normal value. |

HORIZONTAL INTENSITY

| 75th mer. time | Value | Remarks |
|----------------|--------|------------------------------------|
| h m | c.g.s. | |
| 8 05 A.M. | .17900 | Estimated. |
| 9 22 | .19680 | |
| 10 41 | .19187 | Eye-reading minimum. |
| 10 52 | .19336 | |
| 1 19 P.M. | .20343 | Eye-reading maximum. |
| 1 58 | .19397 | |
| 2 38 | .19351 | Change of 901 gammas in 5 minutes. |
| 2 43 | .20252 | |
| 2 46 | .19481 | |
| 3 16 | .20301 | |
| | .19878 | Normal value. |

After 8:00 A.M. eye-readings were secured which show that this is by far the largest storm which has occurred since the records of this observatory began, in April, 1901. The following table will give a general idea of the magnitude of the disturbance.

It will be seen that there was an observed range in declination of nearly 5° and in horizontal intensity of 1,156 gammas and an estimated range of over 2,400 gammas, about one eighth of the horizontal intensity. For comparison, it may be stated that in the storm of October 30-31, 1903, which was the largest recorded at Cheltenham before this one, the range in declination was $1^{\circ} 37'$ and in horizontal intensity about 500 gammas.

J. E. BURBANK

COAST AND GEODETIC SURVEY
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SCIENTIFIC BOOKS

SOME RECENT BOOKS ON CHEMISTRY

OF the making of text-books there is no end; this season brings an abundant crop. Of those to be considered in this review two are text-books of inorganic chemistry.

Any book written by Professor Holleman repays close study. The English translation of his "Text-book of Inorganic Chemistry"¹ is well known in this country. It is inorganic chemistry for advanced students written from a physical-chemical standpoint. Some of the best known modern text-books seem mainly concerned with electrolytic dissociation and the phase rule, banish the periodic system to a page or two at the end of the book and—like nearly all our older books—practically ignore thermo-chemistry. As most French books practically ignore everything but thermo-chemistry, it follows that many students can not read a French book on chemistry in-

telligently. Professor Holleman gives due space to electrolytic dissociation, phase rule and thermo-chemistry, retains the periodic system and applies them all in the text. A student trained by this book can intelligently read any of the present methods of interpreting chemical phenomena. The preface to this edition says:

The portions on the phase rule, spectroscopy, radioactivity, iron-carbon system and metal-ammonia compounds have been largely rewritten by the author, and the chapters on colloids, experimental determination of equivalent weights and unity of matter are entirely new. Professor Werner has kindly approved the chapter on metal ammonia compounds.

Teachers who do not care to use so advanced a book in their classes will find it invaluable for study and reference.

What has been said of the plan of Holleman's book applies also to the "General Chemistry" of Professor Alexander Smith.² It is a broad comprehensive book written in a catholic spirit on the same general lines as that of Holleman. It is somewhat simpler than the latter and better fitted for the American student in arrangement. The book is so well known that it needs no further comment here; its friends will be glad to see that it has appeared in German with an appreciative introduction by Professor Haber.

Of the other books to be considered in this review five are about inorganic preparations and two are manuals of qualitative analysis. These numbers are significant, indicating a general change in methods of laboratory instruction. Making inorganic preparations was an important part of the work in the laboratories of Wöhler, Bunsen and the other great teachers of that time. With the increase of interest in organic work, inorganic preparations were neglected more and more till twenty

¹ "A Text-book of Inorganic Chemistry," by Dr. A. F. Holleman, Professor Ordinarius in the University of Amsterdam. Issued in English in cooperation with Hermon Charles Cooper. Third English edition, partly rewritten. New York, John Wiley and Sons, 1908.

² "Einführung in die allgemeine und anorganische Chemie auf elementarer Grundlage," von Dr. Alexander Smith, Professor der Chemie an der Universität Chicago. Unter Mitwirkung des Verfassers übersetzt und bearbeitet von Dr. Ernst Stern. Mit einem Vorwort von Professor Fritz Haber. Karlsruhe i. B., G. Braun, 1909.